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U.S.S.N. 10/633,385

NOV 02 2006In the Claims:

Please amend the claims as set forth in the following Listing of the Claims.

LISTING OF THE CLAIMS

1. (Currently Amended) A portable fluorescence correlation spectroscopy instrument comprising:

a sample flow chamber;

an excitation source;

a first dichromatic mirror positioned to reflect light from said excitation source;

at least one light focusing element positioned to receive light emitted by said excitation source;

a detector for detecting light, said detector positioned to receive light emitted by a sample excited by said excitation source; and

a correlator coupled to said detector, said correlator for processing data received at said detector and providing data comprising autocorrelation data, crosscorrelation data, or a combination thereof,

the instrument being free of a microscope eyepiece.

2. (Previously Presented) The instrument of claim 1, further comprising an emission filter positioned to transmit light to said detector, said emission filter adapted to transmit light having a wavelength range greater than the range of wavelengths emitted by said excitation source.

3. (Original) The instrument of claim 1, wherein said light focusing element comprises a fiber optic.

4. (Original) The instrument of claim 1, further comprising an aperture positioned to receive light emitted by a sample excited by said excitation source.

5. (Original) The instrument of claim 1, wherein said light focusing element comprises a focusing lens.

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6. (Original) The instrument of claim 3, wherein said fiber optic is coupled to said excitation source.

7. (Original) The instrument of claim 1, further comprising a second light focusing element positioned to focus light emitted by said excitation source in a sample volume.

8. (Original) The instrument of claim 7, further comprising a fiber optic coupled to said excitation source and said first light focusing element.

9. (Previously Presented) The instrument of claim 1, further comprising a second light focusing element, said first light focusing element comprising a fiber optic having a first end disposed in said sample chamber, said second light focusing element being focused on the first end of said fiber optic.

10. (Canceled)

11. (Previously Presented) The instrument of claim 9 further comprising an emission filter positioned to receive light transmitted through said second light focusing element and to transmit said light to said detector.

12. (Original) The instrument of claim 1, wherein said light focusing element comprises a first fiber optic coupled to said excitation source, said instrument further comprising a second fiber optic positioned to receive light emitted by a sample excited by said excitation source.

13. (Original) The instrument of claim 12, wherein said second fiber optic is in a perpendicular relationship to said first fiber optic.

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14. (Previously Presented) The instrument of claim 12, wherein said second fiber optic is in a linear axial relationship with said first fiber optic.

15. (Original) The instrument of claim 1 further comprising a second light focusing element, said first light focusing element being in a perpendicular relationship to said second light focusing element.

16. (Previously Presented) The instrument of claim 1 further comprising a second light focusing element, said first light focusing element being in a linear axial relationship with said second light focusing element.

17. (Original) The instrument of claim 12 further comprising an emission filter positioned to receive light from said second fiber optic and to transmit light to said detector.

18. (Original) The instrument of claim 4 further comprising an emission filter positioned to receive light from said aperture and to transmit light to said detector.

19. (Previously Presented) The instrument of claim 18 further comprising a third fiber optic positioned to transmit light from said emission filter to said detector.

20. (Previously Presented) The instrument of claim 1 wherein said light focusing element comprises a first fiber optic coupled to said excitation source, an end of said first fiber optic extending into said sample chamber, said instrument further comprising:

a second light focusing element; and
an emission filter positioned to receive light from said second light focusing element and to transmit light to said detector.

21. (Original) The instrument of claim 20, wherein said second light focusing element is focused on said end of said fiber optic.

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22. (Original) The instrument of claim 20, wherein said second light focusing element comprises a lens.

23. (Original) The instrument of claim 20, further comprising a second fiber optic positioned to receive light from said emission filter and to transmit light to said detector.

24. (Currently Amended) The instrument of claim 1, further comprising
~~a first dichromatic mirror positioned to receive light from said excitation source;~~

a second light focusing element positioned to receive light reflected from said dichromatic mirror;

a first aperture;

a third light focusing element positioned to receive light transmitted through said dichromatic mirror and through said first aperture; and

a second dichromatic mirror positioned to receive light transmitted through said third light focusing element,

said first detector being positioned to receive at least one of light reflected from said second dichromatic mirror and light transmitted through said dichromatic mirror.

Claims 25-37 (Canceled)

38. (Currently Amended) The instrument of claim 1, further comprising:
~~a first dichromatic mirror positioned to receive light from said excitation source;~~

a second light focusing element positioned to receive light reflected by said first dichromatic mirror;

a third light focusing element positioned to receive light transmitted through said dichromatic mirror;

a second dichromatic mirror positioned to receive light passing through said third light focusing element;

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a first component comprising at least one of a first aperture and a first fiber optic; and

a first detector positioned to receive at least one of light reflected from said second dichromatic mirror through said first component and light transmitted through said second dichromatic mirror through said first component.

Claims 39-47 (Canceled).

48. (Currently Amended) The instrument of claim 1, further comprising:

~~a first dichromatic mirror positioned to receive light emitted by said excitation source;~~

a second light focusing element positioned to receive light reflected by said first dichromatic mirror; and

a first emission filter positioned to receive light transmitted through said first dichromatic mirror and to transmit light to said detector.

49. (Original) The instrument of claim 48 further comprising a fiber optic positioned to receive light from said first emission filter and to transmit light to said detector.

50. (Original) The instrument of claim 48 further comprising an aperture positioned to receive light from said first emission filter and to transmit light to said detector.

51. (Original) The instrument of claim 48 further comprising a first reflective mirror positioned to receive light reflected by said first dichromatic mirror and to reflect said light to said second light focusing element.

52. (Original) The instrument of claim 1, further comprising

a first fiber optic positioned to receive light emitted by a sample excited by said excitation source;

a beam splitter positioned to receive light from said first fiber optic;

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a third fiber optic coupled to said beam splitter;
a first emission filter positioned to receive light from said third fiber optic;
a fourth fiber optic coupled to said beam splitter;
a second emission filter positioned to receive light from said fourth fiber optic; and
a second detector positioned to receive light from said second emission filter,
said first detector being positioned to receive light from said first emission filter.

Claims 53-56 (Cancelled)

57. (Original) The instrument of claim 1, wherein said excitation source is a laser.

58. (Original) The instrument of claim 1, wherein said excitation source is a multi-line laser.

Claims 59 and 60 (Canceled)

61. (Original) The instrument of claim 1, further comprising an excitation light attenuation device.

62. (Previously Presented) The instrument of claim 61, wherein said excitation light attenuation device comprises a neutral density filter, a shutter, an acousto-optical coupler, a pockels cell, or a combination thereof.

63. (Previously Presented) A portable fluorescence correlation spectroscopy instrument comprising:

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a chamber through which a liquid sample can flow, said chamber being positioned such that the confocal plane of said instrument is contained within said chamber;

a monochromatic light source;

a light focusing device adapted to focus light emitted by said monochromatic light source on a sample;

a detector capable of detecting light;

a fiber optic positioned to receive light emitted by a sample excited by said light source, said fiber optic being coupled to said detector; and

a correlator coupled to said detector, said correlator being capable of processing data received at said detector and providing data comprising autocorrelation data, crosscorrelation data, or a combination thereof.

64. (Original) An article comprising:

a carrying case, and

the portable fluorescence correlation spectroscopy instrument of claim 1 disposed in said carrying case.

Claims 65-69 (Canceled)

70. (Previously Presented) A portable fluorescence correlation spectroscopy instrument comprising:

a sample chamber;

an excitation source;

a first light focusing element comprising a fiber optic positioned to receive light emitted by said excitation source;

a second light focusing element, said fiber optic having a first end disposed in said sample chamber, said second light focusing element being focused on the first end of said fiber optic;

a detector for detecting light, said detector positioned to receive light emitted by a sample excited by said excitation source; and

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a correlator coupled to said detector, said correlator for processing data received at said detector and providing data comprising autocorrelation data, crosscorrelation data, or a combination thereof.

Please add the following new claims.

71. (New) The instrument of claim 70 further comprising an emission filter positioned to transmit light to said detector, said emission filter adapted to transmit light having a wavelength range greater than the range of wavelengths emitted by said excitation source.

72. (New) The instrument of claim 70, wherein said fiber optic is coupled to said excitation source.

73. (New) The instrument of claim 70, wherein said second light focusing element comprises a second fiber optic in a perpendicular relationship to said fiber optic of said first light focusing element.

74. (New) The instrument of claim 70, wherein said second light focusing element comprises a second fiber optic and said second fiber optic is in a linear axial relationship with said first fiber optic.

75. (New) The instrument of claim 70, wherein said second light focusing element comprises a second fiber optic, said instrument further comprising an emission filter positioned to receive light from said second fiber optic and to transmit light to said detector.

76. (New) The instrument of claim 75 further comprising a third fiber optic positioned to transmit light from said emission filter to said detector.

77. (New) The instrument of claim 70, wherein said second light focusing element comprises a lens.

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78. (New) The instrument of claim 70 further comprising
a beam splitter positioned to receive light from said second light focusing
element;
a second fiber optic coupled to said beam splitter;
a first emission filter positioned to receive light from said second fiber
optic;
a third fiber optic coupled to said beam splitter;
a second emission filter positioned to receive light from said third fiber
optic; and
a second detector positioned to receive light transmitted through said
second emission filter,
said first detector being positioned to receive light transmitted through
said first emission filter.

79. (New) The instrument of claim 70, wherein said excitation source is at
least one of a laser and a light emitting diode.

80. (New) The instrument of claim 70, wherein said excitation source is a
multi-line laser.

81. (New) The instrument of claim 70, further comprising an excitation light
attenuation device.

82. (New) The instrument of claim 70, wherein said excitation light
attenuation device comprises a neutral density filter, a shutter, an acousto-optical coupler,
a pockels cell, or a combination thereof.

83. (New) An article comprising:
a carrying case, and

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the portable fluorescence correlation spectroscopy instrument of claim 70, disposed in said carrying case.

84. (New) The instrument of claim 70, wherein said excitation source emits light at a wavelength of from about 457 nm to 568 nm.

85. (New) The instrument of claim 70, wherein said excitation source comprises a diode pumped solid state laser.

86. (New) The instrument of claim 70, wherein said excitation source exhibits less than 3 % peak to peak noise.

87. (New) The instrument of claim 70, wherein said excitation source emits at a wavelength of 430 nm, 473 nm, 488 nm, 490 nm, 532 nm, 543 nm or a combination thereof.

88. (New) The instrument of claim 70, wherein the power level of said excitation source is from 1 mW to 10 mW.

89. (New) The instrument of claim 70 further comprising a neutral density filter disposed between the excitation source and the sample flow chamber.

90. (New) The instrument of claim 1, wherein said excitation source comprises a diode pumped solid state laser.

91. (New) The instrument of claim 1, wherein said excitation source exhibits less than 3 % peak to peak noise.

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92. (New) The instrument of claim 1, wherein said excitation source emits light at a wavelength of at least one of 430 nm, 473 nm, 488 nm, 490 nm, and 532 nm.

93. (New) The instrument of claim 1, wherein said excitation source emits light at a wavelength of from about 457 nm to 568 nm.

94. (New) The instrument of claim 1, wherein said excitation source emits light at a wavelength of 532 nm and said instrument is free of a microscope eyepiece.

95. (New) The instrument of claim 1, wherein the excitation source exhibits a power level of from about 1 mW to 10 mW.

96. (New) The instrument of claim 1, wherein a focus of the instrument is set to a fixed plane in the flow chamber.

97. (New) The instrument of claim 1, wherein the instrument operates in a fixed stage mode.

98. (New) A system comprising a battery and the instrument of claim 1 coupled to the battery.

99. (New) An article comprising:
a carrying case; and
a portable fluorescence correlation spectroscopy instrument disposed in said carrying case and being operable in said carrying case, said instrument comprising
a sample flow chamber,
an excitation source,
at least one light focusing element positioned to receive light emitted by said excitation source,

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a detector for detecting light, said detector positioned to receive light emitted by a sample excited by said excitation source, and
a correlator coupled to said detector, said correlator for processing data received at said detector and providing data comprising autocorrelation data, crosscorrelation data, or a combination thereof.

100. (New) A portable fluorescence correlation spectroscopy instrument comprising:

a sample flow chamber;
an excitation source;
at least one light focusing element positioned to receive light emitted by said excitation source;
a detector for detecting light, said detector positioned to receive light emitted by a sample excited by said excitation source;
an emission filter positioned to transmit light to said detector, said emission filter adapted to transmit light having a wavelength range greater than the range of wavelengths emitted by said excitation source; and
a correlator coupled to said detector, said correlator for processing data received at said detector and providing data comprising autocorrelation data, crosscorrelation data, or a combination thereof,
said instrument operating in a fixed stage mode.